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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,482	10/20/2003	Xie Shao	27615-CNT2	7931
23589	7590	01/25/2005	EXAMINER	
HOVEY WILLIAMS LLP 2405 GRAND BLVD., SUITE 400 KANSAS CITY, MO 64108			LEE, SIN J	
			ART UNIT	PAPER NUMBER

1752

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

LD

Office Action Summary	Application No. 10/689,482	Applicant(s) SHAO ET AL.	
	Examiner Sin J. Lee	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-5, 11-19, 24, 25, 27, 36, 39, 41, 45 and 46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-5, 24, 25, 27, 36, 39, 41, 45 and 46 is/are allowed.
- 6) ☒ Claim(s) 11-14 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants have canceled claims 1-2, 6-10, 20-23, 26, 28-35, 37, 38, 40, and 42-44.
2. It is to be noted that the Examiner interpreted claim 14 to mean that the EWG moiety is bonded *directly* to the backbone of the polymer (without any interfering moiety). Claims 36 and 39 are interpreted to mean that at least one of the R₁ and R₂ is bonded directly to the backbone of the polymer (without any interfering moiety). Claim 41 is interpreted to mean that the EWG moiety is bonded *directly* to the backbone of the polymer (without any interfering moiety).
3. In view of the amendment of November 10, 2004, previous 102(b) rejections over Melby'448 and previous 102(b) rejections over Maters et al (EP'110) are hereby withdrawn. Neither of those references teaches at least one of present R₁ and R₂ of claim 39 being directly bonded to the backbone of a polymer binder. Also, in view of the same amendment, previous 102(b) rejections over Beretta et al'184 are hereby withdrawn. The reference does not teach present EWG of claim 41 being directly bonded to the backbone of a polymer binder.
4. In view of the new grounds of rejection, the following rejections are made non-final.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

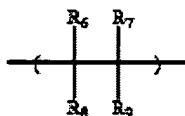
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 11-14 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shan et al (US 6,346,361 B1).

Shan teaches (col.1, lines 7-12, col.3, lines 1-17) a method of coupling a diazonium salt with a polymer (the resulting polymeric azo dye compound is useful in antireflective coating composition, which is used in conjunction with photoresist materials in producing microelectronic devices), and as the polymer, Shan teaches (see col.5, lines 25-67, col.6, lines 1-34) a polymer containing a *comonomer unit* of



where,

R_6 - R_9 are independently either halo, $-\text{O}(\text{CH}_2)_x\text{H}$, $-\text{O}(\text{CH}_2\text{CH}_2)_x\text{OH}$ (where $x=1-10$), $-(\text{OCH}_2\text{CH}_2)_y\text{OH}$ (where $y=0-10$), $-\text{CN}$, $-\text{Z}$, $-\text{OZ}$, $-\text{OCOZ}$, $-\text{COZ}$, $-\text{COOZ}$, $-\text{NHZ}$, $-\text{NZ}_2$, $-\text{NHCOZ}$, $-\text{CONHZ}$, $-\text{NZCOZ}$, $-\text{CONZ}_2$, SZ , $-\text{SO}_3\text{Z}$, $-\text{SO}_2\text{NHZ}$, $-\text{SO}_2\text{NZ}_2$, $-\text{SO}_2\text{Z}$, $-\text{SO}_2\text{CF}_3$, where Z is H , $(\text{C}_1-\text{C}_{10})$ alkyl, $(\text{C}_1-\text{C}_{10})$ hydroxyalkyl, $(\text{C}_1-\text{C}_{10})$ alkoxy, $(\text{C}_1-\text{C}_{10})$ fluoroalkyl, $(\text{C}_1-\text{C}_{10})$ epoxyalkyl, $(\text{C}_1-\text{C}_{10})$ alkenyl, or may be $-\text{COOM}$, $-\text{SO}_3\text{M}$.

Based on this teaching, it would have been obvious to one of ordinary skill in the art to have Shan's R_6 - R_8 to be H atoms, and R_9 to be $-\text{OCOZ}$ in which Z represents C_2 alkenyl group (which means that R_9 would be $-\text{OCO}-\text{C}(\text{H})=\text{CH}_2$) with a reasonable expectation of successfully coupling a diazonium salt with the polymer. For Shan's polymer having the comonomer unit shown above in which R_9 is $-\text{OCO}-\text{C}(\text{H})=\text{CH}_2$, present R_1 and R_2 would be H atoms which is (indirectly) bonded to the polymer, and present EWG would be $-\text{OCO}-$ (carboxyl group) which is attached to the backbone of

the polymer. Therefore, Shan's teaching would render obvious present polymer binders and thus present inventions of claims 11-14 and 17-19 (it is the Examiner's position that the coupling of the diazonium salt will occur to Shan's monomer unit shown in col.5, lines 30-67, col.6, lines 1-5 because that monomer unit is an essential unit whereas the presence of the comonomer unit as shown above is optional (although it is preferable to have one). Therefore, it is the Examiner's position that Shan's diazonium salt-coupled polymer would still have the comonomer unit shown above intact).

Allowable Subject Matter

7. Claims 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Shan does not teach or suggest present light attenuating compound of claim 15 bonded to the polymer binder through a linkage unit.

8. Claims 3-5, 24, 25, 27, 36, 39, 41, 45, and 46 are allowed. Melby'448 or Maters et al (EP'110) does not teach or suggest at least one of present R_1 and R_2 of claim 39 being directly bonded to the backbone of a polymer binder. Beretta et al'184 does not teach present EWG of claim 41 being directly bonded to the backbone of a polymer binder. Also, none of the cited prior arts teaches or suggests present polymers of claims 36, 45, and 46.

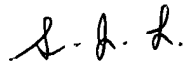
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333.

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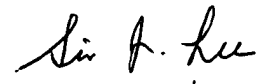
The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
January 24, 2005



Sin J. Lee
Patent Examiner
Technology Center
1700